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## Abstract

**Title: Latency bias in nonparametric permutation tests for electrophysiological EEG/MEG data**

The analysis of Electroencephalographic (EEG) and Magnetoencephalographic (MEG) data with nonparametric statistical tests like the Monte Carlo Cluster Permutation drastically increased the sensitivity of statistical tests over parametric tests and seemingly solved the multiple comparisons problem (MCP). However, since event related electric potentials and magnetic fields as well as their underlying neural sources typically increase in amplitude as well as temporal and spatial extent with increasing latency, later effects often dominate the statistical image leading to false negative statistical effects of earlier difference activations. Here we discuss the characteristics of this latency bias and make suggestions how to reduce its magnitude.